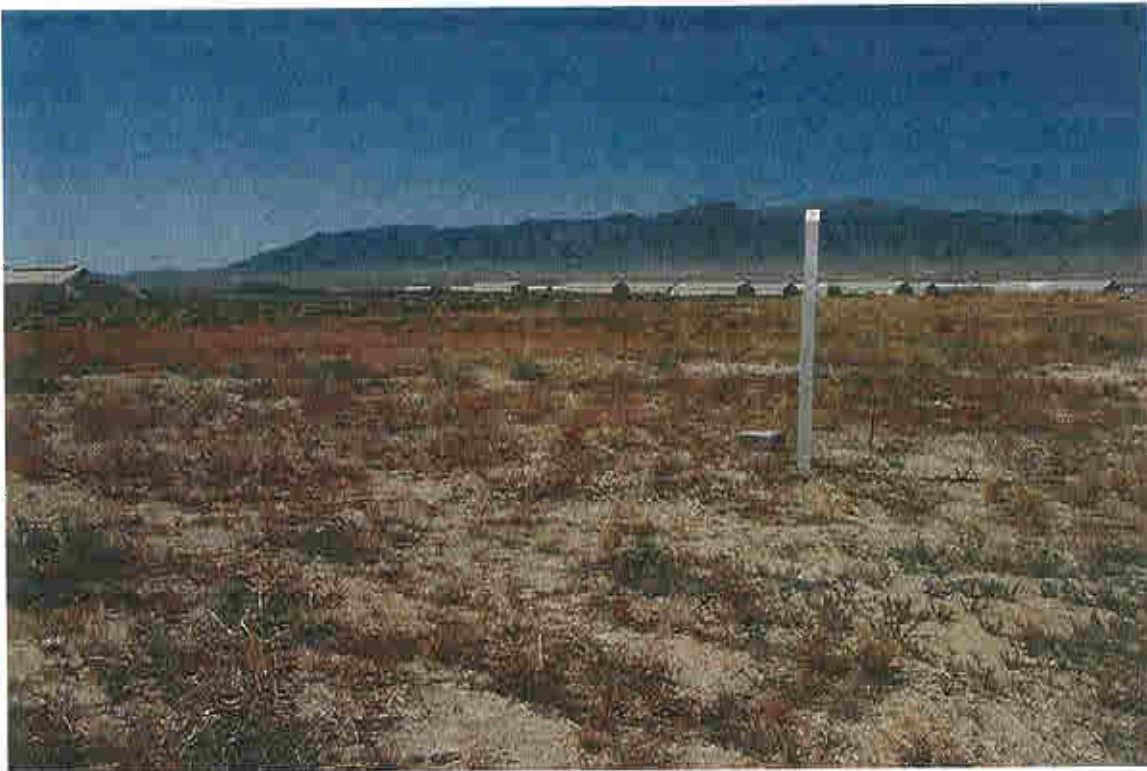


Decision Document

SWMU I-17, Building 104-10 Landfill
Hawthorne Army Depot
Hawthorne, Nevada



Hawthorne Army
Depot



US Army Corps
of Engineers

September 1999

Decision Document SWMU I-17

RECEIVED

September 1999

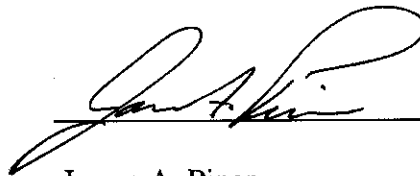
OCT 01 1999

ENVIRONMENTAL PROTECTION

The selected remedy is protective of human health and the environment. It has been shown that a complete pathway to human health and the environment does not exist, and there is no potential for an exposure pathway to be completed in the future.

U. S. Army

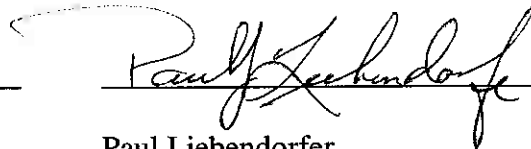
29 SEP 1999



James A. Piner
Lieutenant Colonel, U.S. Army

State of Nevada

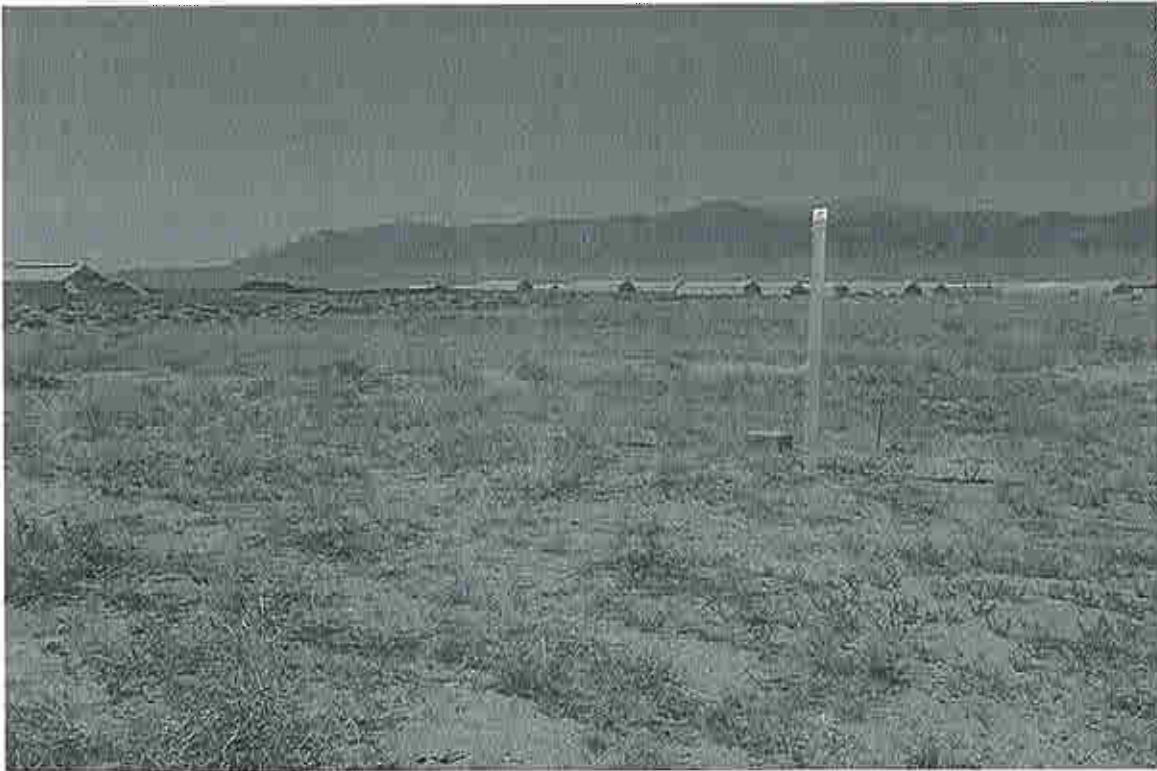
13 Oct 1999



Paul Liebendorfer
Chief, Bureau of Federal Facilities

Decision Document

SWMU I-17, Building 104-10 Landfill
Hawthorne Army Depot
Hawthorne, Nevada



Hawthorne Army
Depot



US Army Corps
of Engineers

September 1999

Decision Document
SWMU I-17, Building 104-10 Landfill
Hawthorne Army Depot
Hawthorne, Nevada

1.0 Introduction:

This decision document describes the rationale for the proposed closure of SWMU I-17, building 104-10 landfill, at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. This document was prepared by the U.S. Army Corps of Engineers, Sacramento District, HWAD and the Nevada Department of Environmental Protection (NDEP).

Tetra Tech, Inc. (Tt), was tasked by the US Army Corps of Engineers, Sacramento District (USACE), to perform remedial investigations and ground water monitoring at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. These tasks were conducted from 1993 through 1997, primarily at solid waste management units (SWMUs) designated by the Army and the Nevada Division of Environmental Protection (NDEP). The NDEP is the lead regulatory agency for environmental issues at HWAD. The purpose of the monitoring was to determine the extent and degree of environmental impacts, if any, associated with activities performed at each SWMU. The primary goal of the investigation was to assess the environmental impacts and to report the findings, present conclusions, and recommend any remediation, if necessary.

With guidance from the NDEP, basewide proposed closure goals (PCGs) for soil were established as acceptable levels so that SWMU closure could be recommended and to assist in directing the investigative efforts toward those SWMUs where the target analytes were of greatest concern (Appendix B). These PCGs were used as action levels throughout this investigation and are used for comparison with the detected analytes in this report.

2.0 Site History

SWMU I17 is in the southern portion of HWAD's central magazine area in the Building 104 Group, approximately 4,100 feet north of US Highway 95 and approximately 900 feet east of Corey Road (Figure 1-1). This SWMU I17 is the site of a debris-filled soil pile (landfill) approximately 90 feet long by 30 feet wide by three high (Tt 1993). The site is 350 feet east of Building 104-10 and adjacent to and east of SMWU B28d (Figure 1-2).

The USACE, HWAD, and the NDEP agreed to define the boundaries of each SWMU using annotated monuments and survey pins. As part of Tt's 1997 field investigation, a survey monument was constructed and surveyed at SWMU I17. A brass survey pin on the monument designates the monument number HWAAP-45-1996 and the SWMU number I17. Three corner pins were set and surveyed to define the SWMU boundary,

with the monument as the northwest corner. The location of these corner markers and the SWMU boundary are shown on Figure 1-2. The survey data for SWMU I17 is presented in Appendix A.

3.0 Site Conditions

During the site inspections of SWMU I17, concrete rubble, wood and wooden pallets, pipes, rebar, sheet metal, and other metal debris were observed in the landfill pile at this SWMU. The soil types encountered during Tt's investigation of this SWMU were mostly sand and silty sand.

Using the calculated ground water elevations from the basewide network of monitoring wells; the depth to the shallowest ground water at this SWMU is interpolated to be approximately 240 feet below the ground surface (bgs), with a projected ground water gradient direction estimated to be toward the northwest.

Based on the site inspections in which debris was observed in the landfill at SWMU I17 and on the operations at the facilities adjacent to this SWMU, the target analytes for the remedial investigation at SWMU I17 are metals, explosives, and volatile organic compounds (VOCs).

4.0 Investigations

Resource Application, Inc. (RAI), conducted a site inspection of SWMU I17 in 1992. During this inspection, metal, concrete scrap, and wooden pallets were observed in the landfill at this SWMU. No investigation activities were conducted during this inspection, and no samples were collected from the SWMU at that time.

Ten vapor monitoring probes were installed at SWMUs B28d and I17 to depths of five feet bgs to collect the soil gas samples. The locations of these soil gas probes are shown on Figure 3-1. After the probes were installed, ten soil gas samples were collected and analyzed by TES's laboratory in Columbia, Maryland, using United States Environmental Protection Agency (USEPA) methods 8010M and 8020M.

Tt's sampling activities for the remedial investigation at SWMU I17 included collecting and analyzing subsurface soil samples. All of the soil samples that were collected were analyzed for all of the target analytes. One test pit, TP01, was excavated at SWMU I17 to characterize the landfill pile contents and to collect soil samples within or adjacent to the disposed debris to assess if target analytes had been released at this SWMU. Test pit TP01 was excavated near the center of the landfill pile. This test pit was five feet long by five feet wide and was excavated to a depth of five feet bgs in the center. Three soil samples, including one collocated duplicate sample, were collected from TP01 at depths of approximately five feet bgs near the center of the test pit.

5.0 Investigation Results

During Tt's 1997 remedial investigation of SWMU I17, aluminum (5,360 mg/kg to 5,680 mg/kg), arsenic (2.7 mg/kg to 3 mg/kg), barium (67.2 mg/kg to 69.9 mg/kg), total chromium (4.2 mg/kg to 4.5 mg/kg), and lead (4.7 mg/kg to 5.9 mg/kg) were found at

concentrations less than their respective maximum expected background concentrations and less than their respective PCGs. Therefore, all of the metals found in the soil samples at SWMU I17 appear to be ubiquitous and naturally occurring concentrations. The soil gas results found no concentrations of VOCs in any of the soil gas samples collected during this survey, indicating that VOCs were not disposed of at SWMU B28d or SWMU I17. During Tt's 1997 remedial investigations of SWMU I17, the three subsurface soil samples did not contain any explosives or VOCs; therefore there does not appear to have been any releases of these target analytes to the subsurface soils from the disposal activities in the landfill at this SWMU. No stained soils or other indications of hazardous waste releases were observed at SWMU I17. The investigation test pit contained no debris, indicating that the landfill disposal at SWMU I17 was only on the surface.

6.0 Remediation

No remediation action was required for this site.

7.0 Remediation Results

Not applicable

8.0 Public Involvement:

It is the U.S. Department of Defense and Army policy to involve the local community throughout the investigation process at an installation. To initiate this involvement, HWAD has established and maintains a repository library at the local public library. This repository includes final copies of all past studies and other documents regarding environmental issues at HWAD. As future environmental documents are made available to HWAD the repository shall be updated.

HWAD has solicited community participation in establishment of a restoration and advisory board (RAB). To date there has been insufficient response and HWAD has not formed a RAB. HWAD has held open houses to inform the public of on going environmental issues. HWAD continues to solicit community involvement, and will establish a RAB should sufficient community interest be obtained.

9.0 Conclusions and Recommendations

There is no evidence of any of the chemicals of concern at SWMU J17. SWMU J17 is recommended to the NDEP for site closure without land use restrictions.

10.0 REFERENCES

NDEP. September 1998. Letter to HWAD. Draft Remedial Investigation reports, Solid Waste Management Units A05, I05, I06, I17, I18.

Resource Application Inc. (RAI) 1992. Site Screening Inspection for the Hawthorne Army Ammunition Plant, Hawthorne, NV. Prepared for the US Army Corps of Engineers Toxic and Hazardous Materials Agency by Resource Applications, Inc., Falls Church, VA. December 1992.

Tetra Tech, Inc. (Tt). 1993. Draft Technical Memorandum for Group B SWMUs, Hawthorne Army Ammunition Plant. November 1993.

_____. 1994a. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Site Safety and Health Plan.

_____. 1994b. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Work Plan. Two volumes.

_____. 1994c. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Chemical Data Acquisition Plan.

_____. 1997a. Final Quarterly Ground Water Monitoring Report, First Quarter 1997, Hawthorne Army Depot, Hawthorne, Nevada. September 1997.

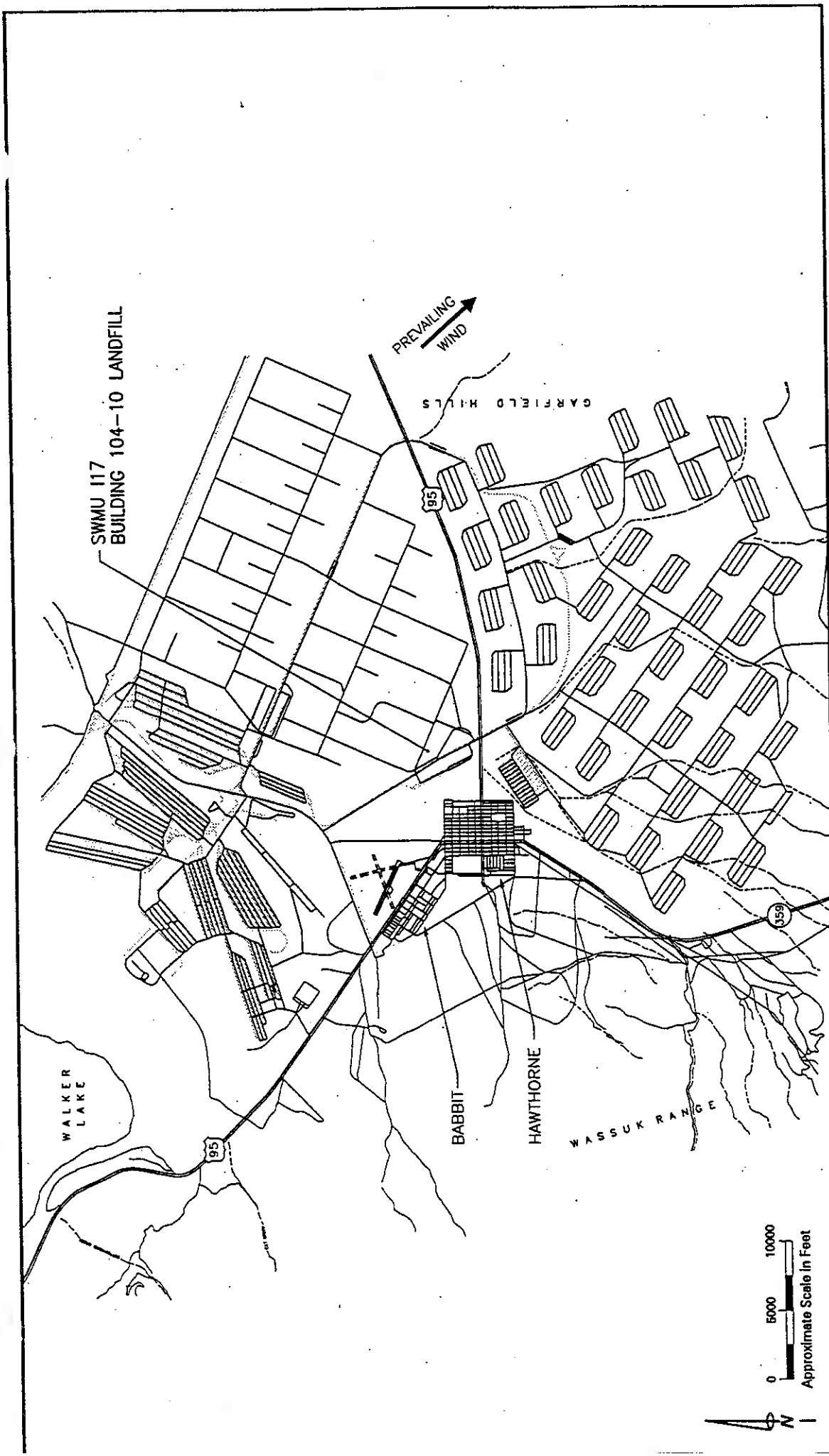
_____. 1997b. Quarterly Ground Water Monitoring Report, Second Quarter 1997, Hawthorne Army Depot, Hawthorne, Nevada. July 1997.

_____. 1997c. Final Site Health and Safety Plan, Hawthorne Army Depot, Hawthorne, Nevada. February 1997.

_____. 1997d. Final Data Package with recommendations for future action, Group B solid waste management units, Hawthorne Army Depot, Hawthorne, Nevada, Volumes 1, 2a, and 2b. January 1997.

_____. 1997e. Final Sampling and Analysis Plan, Remedial Investigations, Groups A and B Solid Waste Management Units, Hawthorne Army Depot, Hawthorne, Nevada. February 1997.

_____. 1997f. Final Technical Memorandum Background Sampling at the Hawthorne Army Depot, Hawthorne, Nevada. March 1997.



SOURCE: TETRA TECH FINAL DATA PACKAGE, 1998 (REV. 1997)

Site Location Map


SWMU I17

Building 104-10 Landfill

Hawthorne Army Depot

Hawthorne, Nevada

Figure 1-1



0 50 100

Approximate Scale in feet



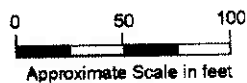
Figure 1-2



Legend:

- Test Pit
- Boundary Corner Pin
- Drain Line
- Soil Boring Location

- Explosion Barrier
- Railroad
- Soil Gas Location
- SWMU Monument



Investigation Activity Map
SWMU 11:
Building 104-10 Landfill
 Hawthorne Army Depot
 Hawthorne, Nevada
Figure 3-1

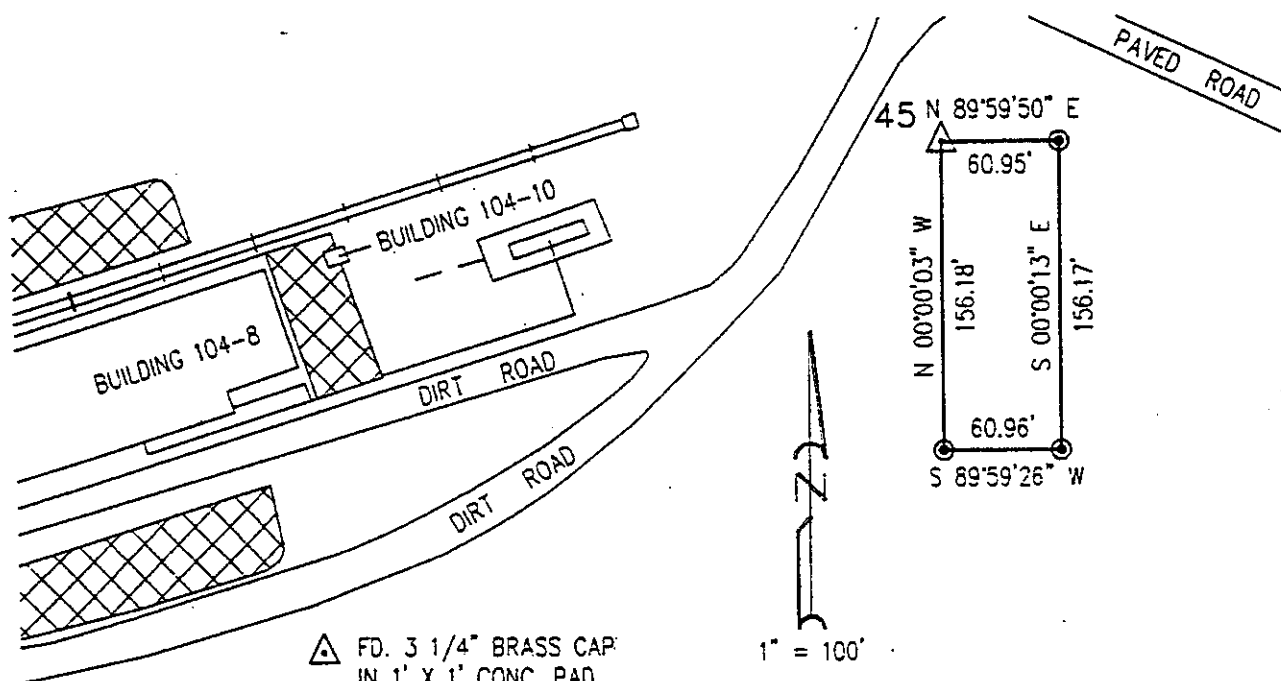
Appendix A

COUNTRY USA	TYPE OF MARK BRASS CAP	STATION 45		
LOCALITY HAWTHORNE NEV.	STAMPING ON MARK 45 I-17	AGENCY (CAST IN MARKS) COE HWAAP	ELEVATION 4281.33	(M)
LATITUDE 38°32'10.72755" N	LONGITUDE 118°36'02.31376" W	DATUM NAD '27	DATUM NAD '29	
(NORTHING)(EASTING) (FT) 1378341.37	(EASTING)(NORTHING) (FT) 495048.98	GRID AND ZONE NEVADA SP WEST	ESTABLISHED BY (AGENCY) A.L.S.	
(NORTHING)(EASTING) (FT) (M)	(EASTING)(NORTHING) (FT) (M)	GRID AND ZONE (M)	DATE 1997	ORDER 2ND

TO OBTAIN		GRID AZIMUTH, ADD		TO THE GEODETIC AZIMUTH	
TO OBTAIN		GRID AZ. (ADD)(SUB.)		TO THE GEODETIC AZIMUTH	
OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID) (MAGNETIC)	BACK AZIMUTH	GEOD. DISTANCE (METERS) (FEET)	GRID DISTANCE (METERS) (FEET)	

MONUMENT 45 - SWMU I-17

FROM HIGHWAY 95 TAKE MINE ROAD NORTHWEST 1 MILE TO A ROAD, THEN NORTHEAST 300 FEET (ACROSS RAILROAD TRACKS), THEN SOUTHEAST 1600 FEET TO BUILDING 104-8. SEE MAP BELOW. MONUMENTS ARE 3 1/4" BRASS CAPS SET IN 1' X 1' CONCRETE PADS AND ARE MARKED WITH 4" X 4" X 6' WOOD POSTS, PAINTED WHITE.



△ FD. 3 1/4" BRASS CAP
IN 1' X 1' CONC. PAD
STAMPED WITH No. SHOWN

◎ SET #5 REBAR WITH
NYLON CAP MARKED
"ALS CONTROL"

1" = 100'

SKETCH

DA FORM 1959

REPLACES DA FORMS 1959
AND 1960, 1 FEB 57, WHICH
ARE OBSOLETE.

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent
agency is TRADOC.

SWMU I17 Survey Data
Hawthorne Army Depot
Hawthorne, Nevada

SWMU	Point ID	Northing (feet)	Easting (feet)	Elevation
I17	HWAAP-45-1996	1378341.37	495048.98	4281.33
I17	Pin 1	1378341.37	495109.93	NE
I17	Pin 2	1378185.20	495109.94	NE
I17	Pin 3	1378195.19	495048.98	NE
I17	TP01	1378261.59	495048.92	NE
B28d	SB01	1378246.23	495003.90	NE
B28d	SB02	1378195.24	495024.20	NE
B28d	SB03	1378261.59	495048.92	NE
B28d	SB04	1378115.84	495067.09	NE
B28d	SB05	1378173.03	494970.72	NE
B28d	SG01	1378245.15	494990.75	NE
B28d	SG02	1378235.30	495028.50	NE
B28d	SG03	1378177.75	495013.92	NE
B28d	SG04	1378115.87	495021.60	NE
B28d	SG05	1378031.30	494992.71	NE
B28d	SG06	1378146.45	494982.71	NE
B28d	SG07	1378237.86	494934.97	NE
B28d	SG08	1378261.59	495048.92	NE
B28d	SG09	1378245.47	495113.45	NE
B28d	SG10	1378138.05	495069.96	NE

Notes:

NE = Not established.

Coordinate data based on electronic map file using the NAD 1927 datum.

Elevation data based on surveyors map using NGVD 1929 datum.

Appendix B

**Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada**

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-Carcinogenic (NC)	HWAD Proposed Closure Goals for Soil (mg/kg)	HWAD Proposed Closure Goal Source
Nitrate	Anion	NC	128,000	Calculated Subpart S ¹
2-Amino-dinitrotoluene	Explosive	NC	-	NA ²
4-Amino-dinitrotoluene	Explosive	NC	-	NA
1,3-Dinitrobenzene	Explosive	NC	8	Calculated Subpart S
2,4-Dinitrotoluene	Explosive	NC	160	Calculated Subpart S
2,6-Dinitrotoluene	Explosive	NC	80	Calculated Subpart S
HMX	Explosive	NC	4,000	Calculated Subpart S
Nitrobenzene	Explosive	NC	40	Calculated Subpart S
Nitrotoluene (2-, 3-, 4-)	Explosive	NC	800	Calculated Subpart S
RDX	Explosive	NC	64	Calculated Subpart S
Tetryl	Explosive	NC	800	Calculated Subpart S
1,3,5-Trinitrobenzene	Explosive	NC	4	Calculated Subpart S
2,4,6-Trinitrotoluene	Explosive	C	233	Calculated Subpart S
Aluminum	Metal	NC	80,000	Calculated Subpart S
Arsenic (cancer endpoint)	Metal	C & NC	30	Background ³
Barium and compounds	Metal	NC	5,600	Calculated Subpart S
Beryllium and compounds	Metal	C	1	Background
Cadmium and compounds	Metal	NC	40	Calculated Subpart S
Chromium III and compounds	Metal	NC	80,000	Calculated Subpart S
Lead	Metal	NC	1000	PRG ⁴
Mercury and compounds (inorganic)	Metal	NC	24	Calculated Subpart S
Selenium	Metal	NC	400	Calculated Subpart S
Silver and compounds	Metal	NC	400	Calculated Subpart S
Acenaphthene	PAH	NC	4,800	Calculated Subpart S
Benzo[a]anthracene	PAH	C	0.96	Calculated Subpart S
Benzo[a]pyrene	PAH	C	0.10	Detection Limit ⁵
Benzo[b]fluoranthene	PAH	C	0.96	Calculated Subpart S
Benzo[k]fluoranthene	PAH	C	10	Calculated Subpart S
Chrysene	PAH	C	96	Calculated Subpart S
Dibenz[ah]anthracene	PAH	C	0.96	Calculated Subpart S
Fluoranthene	PAH	NC	3,200	Calculated Subpart S
Fluorene	PAH	NC	3,200	Calculated Subpart S
Indeno[1,2,3-cd]pyrene	PAH	C	-	NA
Naphthalene	PAH	NC	3,200	Calculated Subpart S
Pyrene	PAH	NC	2,400	Calculated Subpart S
Total Petroleum Hydrocarbons as Diesel (TPH-d)	PAH	C	100	NDEP Level Clean-up ⁶
Polychlorinated biphenyls (PCBs)	PCBs	C	25	TSCA ⁷
Bis(2-ethylhexyl)phthalate (DEHP)	SVOC	C	1,600	Calculated Subpart S
Bromoform (tribromomethane)	SVOC	C	89	Calculated Subpart S

**Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada**

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-carcinogenic (NC)	HWAD Proposed Closure Goals for Soil (mg/kg)	HWAD Proposed Closure Goal Source
Butyl benzyl phthalate	SVOC	NC	16,000	Calculated Subpart S
Dibromochloromethane	SVOC	C	83	Calculated Subpart S
Dibutyl-phthalate	SVOC	NC	8,000	Calculated Subpart S
Diethyl phthalate	SVOC	NC	64,000	Calculated Subpart S
Phenanthrene	SVOC		-	NA
Phenol	SVOC	NC	48,000	Calculated Subpart S
Acetone	VOC	NC	800	Calculated Subpart S
Anthracene	VOC	NC	24,000	Calculated Subpart S
Benzene	VOC	C	24	Calculated Subpart S
Bis(2-chloroisopropyl)ether	VOC	C	3,200	Calculated Subpart S
Bromomethane	VOC	NC	112	Calculated Subpart S
Carbon tetrachloride	VOC	C	5	Calculated Subpart S
Chlorobenzene	VOC	NC	1,600	Calculated Subpart S
Chloroform	VOC	C	115	Calculated Subpart S
Chloromethane	VOC	C	538	Calculated Subpart S
Dibromomethane	VOC	C	0.008	Calculated Subpart S
1,2-Dichlorobenzene	VOC	NC	7,200	Calculated Subpart S
1,4-Dichlorobenzene	VOC	C	18,300	Calculated Subpart S
Dichlorodifluoromethane	VOC	C	16,000	Calculated Subpart S
Ethylbenzene	VOC	NC	8,000	Calculated Subpart S
Methylene bromide	VOC	NC	800	Calculated Subpart S
Methylene chloride	VOC	C	4,800	Calculated Subpart S
2-Methylnaphthalene	VOC		-	NA
1,1,2,2-Tetrachloroethane	VOC	C	35	Calculated Subpart S
Tetrachloroethylene (PCE)	VOC	C & NC	800	Calculated Subpart S
Toluene	VOC	NC	16,000	Calculated Subpart S
1,1,1-Trichloroethane	VOC	NC	7,200	Calculated Subpart S
Trichloroethylene (TCE)	VOC	C & NC	480	Calculated Subpart S
Trichlorofluoromethane	VOC	NC	24,000	Calculated Subpart S
1,2,3-Trichloropropane	VOC	C	480	Calculated Subpart S
Vinyl chloride	VOC	C	0.37	Calculated Subpart S
Xylene Total (m-, o-, p-)	VOC	NC	160,000	Calculated Subpart S
2,3,7,8-TCDD	Dioxin	C	0.000005	Calculated Subpart S

^a RCRA 55 FR 30870

^b Not available

^c Highest background concentration detected in 50 background soil samples

^d Smucker, Stanford J. USEPA Rgion IX, Preliminary Remedial Goals, Second Half, Sep. 1995

^e Method detection limit for Volatile Organic Compounds by EPA Method 8260 or

Semi-Volatile Organic Compounds analyzed by EPA Method 8270

^f Nevada Division of Environmental Protection

^g Cleanup level for PCB spills in accordance with Toxic Substance and Control Act Spill Policy Guidelines 40 CFR 761

Appendix C

Metals
Method 6010A (APCL)

Sample ID	Location ID	Sample Depth Date (feet)	Lab	Aluminum, Total mg/kg	Arsenic, Total mg/kg	Barium, Total mg/kg	Beryllium, Total mg/kg	Cadmium, Total mg/kg	Chromium, Total mg/kg	Lead, Total mg/kg	Nickel, Total mg/kg	Selenium, Total mg/kg	Silver, Total mg/kg
I17-TP01-1-S	TP01	2/28/97 5	APCL	5360	3	67.2	<0.017	<0.02	4.2	5.9	NA	<0.18	<0.07
I17-TP01-2-S	TP01	2/28/97 5	APCL	5680	2.9	68.4	<0.017	<0.02	4.5	5.2	NA	<0.18	<0.07
I17-TP01-3-S	TP01	2/28/97 5	APCL	5630	2.7	69.9	<0.017	<0.02	4.2	4.7	NA	<0.18	<0.07
Analyses				3	3	3	3	3	3	3	0	3	3
Detections				3	3	3	0	0	3	3	0	0	0
Minimum Concentration				5360	2.7	67.2	0	0	4.2	4.7	0	0	0
Maximum Concentration				5680	3	69.9	0	0	4.5	5.9	0	0	0
HWAD - PCG				80000	100	2000	1	20	20	100	NE	20	100
HWAD - PCG Hits				0	0	0	0	0	0	0	NE	0	0
Maximum Background Concentration				12365	18.1	447	0.58	1.08	13.76	16.7	0	0	0
Background Hits				0	0	0	0	0	0	0	0	0	0

Notes:

NA = Not analyzed.

NE = Not established.

Mercury
Method 7471A (APCL)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Mercury, Total mg/kg
I17-TP01-1-S	TP01	2/28/97	5	APCL	<0.069
I17-TP01-2-S	TP01	2/28/97	5	APCL	<0.069
I17-TP01-3-S	TP01	2/28/97	5	APCL	<0.069
Analyses					3
Detections					0
Minimum Concentration					0
Maximum Concentration					0
HWAD - PCG					24
HWAD - PCG Hits					0
Maximum Background Concentration					0.108
Background Hits					0

Notes:

NA = Not analyzed.

NE = Not established.

vJCs
Method 8260A (APCL)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromoethane (EDB)
I17-TP01-1-S	TP01	2/28/97	5	APCL	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0004	<0.0002	<0.0001	<0.0005
I17-TP01-2-S	TP01	2/28/97	5	APCL	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0004	<0.0002	<0.0001	<0.0005
I17-TP01-3-S	TP01	2/28/97	5	APCL	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0004	<0.0002	<0.0001	<0.0005
Analyses					3	3	3	3	3	3	3	3	3	3	3	3
Detections					0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG					NE	7200	35	NE	NE	NE	NE	NE	480	NE	NE	0.008
HWAD - PCG Hits					NE	0	0	NE	NE	NE	NE	0	0	NE	NE	0

Notes:
NA = Not analyzed.
NE = Not established.

Method 8260A (APCL)

Sample ID	Location ID	Sample Depth Date (feet)	Lab	1,2-Dichlorobenzene mg/kg	1,2-Dichloroethane mg/kg	1,2-Dichloropropane mg/kg	1,3,5-Trimethylbenzene mg/kg	1,3-Dichlorobenzene mg/kg	1,3-Dichloropropane mg/kg	1,4-Dichlorobenzene mg/kg	2,2-Dichloropropane mg/kg	2-Chlorotoluene mg/kg	4-Chlorotoluene mg/kg	4-Isopropyltoluene mg/kg	Benzene mg/kg
I17-TP01-1-S	TP01	2/28/97 5	APCL	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002
I17-TP01-2-S	TP01	2/28/97 5	APCL	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002
I17-TP01-3-S	TP01	2/28/97 5	APCL	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002
Analyses				3	3	3	3	3	3	3	3	3	3	3	3
Detections				0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration				0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG				7200	NE	NE	NE	NE	NE	150	NE	NE	NE	NE	10
HWAD - PCG Hits				0	NE	NE	NE	NE	NE	0	NE	NE	NE	NE	0

Notes:
 NA = Not analyzed.
 NE = Not established.

VOCs
Method 8260A (APCL)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Bromobenzene mg/kg	Bromochloromethane mg/kg	Bromodichloromethane mg/kg	Bromotorm mg/kg	Bromomethane mg/kg	Carbon tetrachloride mg/kg	Chlorobenzene mg/kg	Chloroethane mg/kg	Chloroform mg/kg	Chloromethane mg/kg	cis-1,2-Dichloroethene mg/kg	cis-1,3-Dichloropropene mg/kg
I17-TP01-1-S	TP01	2/28/97	5	APCL	<0.0001	<0.0005	<0.0002	<0.0003	<0.0003	<0.0001	<0.0002	<0.0007	<0.0002	<0.0003	<0.0002	<0.0001
I17-TP01-2-S	TP01	2/28/97	5	APCL	<0.0001	<0.0005	<0.0002	<0.0003	<0.0003	<0.0001	<0.0002	<0.0007	<0.0002	<0.0003	<0.0002	<0.0001
I17-TP01-3-S	TP01	2/28/97	5	APCL	<0.0001	<0.0005	<0.0002	<0.0003	<0.0003	<0.0001	<0.0002	<0.0007	<0.0002	<0.0003	<0.0002	<0.0001
Analyses					3	3	3	3	3	3	3	3	3	3	3	3
Detections					0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG					NE	NE	NE	89	112	10	2000	NE	120	538	NE	NE
HWAD - PCG Hits					NE	NE	NE	0	0	0	0	NE	0	0	NE	NE

Notes:
NA = Not analyzed.
NE = Not established.

VOCs
Method 8260A (APCL)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Dibromochloromethane	Dibromochloropropane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m-&p-Xylenes	Methylene chloride	MTBE	n-Butylbenzene	n-Propylbenzene
I17-TP01-1-S	TP01	2/28/97	5	APCL	<0.0002	<0.0009	<0.0005	<0.0002	<0.0001	<0.0002	<0.0002	<0.0005	<0.0007	<0.0002	<0.0002	<0.0001
I17-TP01-2-S	TP01	2/28/97	5	APCL	<0.0002	<0.0009	<0.0005	<0.0002	<0.0001	<0.0002	<0.0002	<0.0005	<0.0007	<0.0002	<0.0002	<0.0001
I17-TP01-3-S	TP01	2/28/97	5	APCL	<0.0002	<0.0009	<0.0005	<0.0002	<0.0001	<0.0002	<0.0002	<0.0005	<0.0007	<0.0002	<0.0002	<0.0001
Analyses					3	3	3	3	3	3	3	3	3	3	3	3
Detections					0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration					0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG					83	NE	800	16000	8000	NE	NE	160000	4800	NE	NE	NE
HWAD - PCG Hits					0	NE	0	0	0	NE	NE	0	0	NE	NE	NE

Notes:
NA = Not analyzed.
NE = Not established.

VOCs
Method 8260A (APCL)

Sample ID	Location ID	Sample Depth Date (feet)	Lab	Naphthalene mg/kg	o-Xylene mg/kg	sec-Butylbenzene mg/kg	Styrene mg/kg	tert-Butylbenzene mg/kg	Tetrachloroethene mg/kg	Toluene mg/kg	trans-1,2-Dichloroethene mg/kg	trans-1,3-Dichloropropene mg/kg	Trichloroethene mg/kg	Trichlorofluoromethane mg/kg	Vinyl chloride mg/kg
I17-TP01-1-S	TP01	2/28/97 5	APCL	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002
I17-TP01-2-S	TP01	2/28/97 5	APCL	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002
I17-TP01-3-S	TP01	2/28/97 5	APCL	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002
Analyses				3	3	3	3	3	3	3	3	3	3	3	3
Detections				0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration				0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG				3200	160000	NE	NE	NE	15	16000	NE	NE	10	24000	24000
HWAD - PCG Hits				0	0	NE	NE	NE	0	0	NE	NE	0	0	0

Notes:
NA = Not analyzed.
NE = Not established.

Explosives
Method 8330 (APCL)

Sample ID	Location ID	Sample Depth Date (feet)	Lab	1,3,5-Trinitrobenzene mg/kg	1,3-Dinitrobenzene mg/kg	2,4,6-Trinitrotoluene mg/kg	2,4-Dinitrotoluene mg/kg	2,6-Dinitrotoluene mg/kg	2-Nitrotoluene mg/kg	3-Nitrotoluene mg/kg	4-Nitrotoluene mg/kg	HMX mg/kg	Nitrobenzene mg/kg	RDX mg/kg	Tetryl mg/kg	2-Amino-4,6-dinitrotoluene mg/kg	4-Amino-2,6-dinitrotoluene mg/kg
I17-TP01-1-S	TP01	2/28/97 5	APCL	<0.013	<0.025	<0.041	<0.026	<0.057	<0.073	<0.063	<0.073	<0.047	<0.056	<0.051	<0.046	NA	NA
I17-TP01-2-S	TP01	2/28/97 5	APCL	<0.013	<0.025	<0.041	<0.026	<0.057	<0.073	<0.063	<0.073	<0.047	<0.056	<0.051	<0.046	NA	NA
I17-TP01-3-S	TP01	2/28/97 5	APCL	<0.013	<0.025	<0.041	<0.026	<0.057	<0.073	<0.063	<0.073	<0.047	<0.056	<0.051	<0.046	NA	NA
Analyses				3	3	3	3	3	3	3	3	3	3	3	3	0	0
Detections				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Concentration				0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWAD - PCG				4	8	233	2.6	80	800	800	800	4000	40	64	800	NE	NE
HWAD - PCG Hits				0	0	0	0	0	0	0	0	0	0	0	0	NE	NE

Notes:

NA = Not analyzed.

NE = Not established.

Explosives
Method 8330M (APCL)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Picric Acid
					mg/kg
I17-TP01-1-S	TP01	2/28/97	5	APCL	<0.69
I17-TP01-2-S	TP01	2/28/97	5	APCL	<0.69
I17-TP01-3-S	TP01	2/28/97	5	APCL	<0.69
Analyses					3
Detections					0
Minimum Concentration					0
Maximum Concentration					0
HWAD - PCG					NE
HWAD - PCG Hits					NE

Notes:

NA = Not analyzed.

NE = Not established.

RDX Test Kit
Method 8510 (Tt Field)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	RDX mg/kg	RDX-Dup mg/kg	RDX (Rerun) mg/kg
I17-TP01-1-S	TP01	2/28/97	5	Tt Field	7.29	NA	NA
I17-TP01-2-S	TP01	2/28/97	5	Tt Field	8.4	NA	NA
I17-TP01-3-S	TP01	2/28/97	5	Tt Field	9.91	NA	NA
Analyses					3	0	0
Detections					3	0	0
Minimum Concentration					7.29	0	0
Maximum Concentration					9.91	0	0
HWAD - PCG					64	64	64
HWAD - PCG Hits					0	0	0

Notes:

NA = Not analyzed.

NE = Not established.

TNT Test Kit
Method 8515 (Tt Field)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	2,4,6-TNT mg/kg	2,4,6-TNT-Dup mg/kg	2,4,6-TNT (Rerun) mg/kg
I17-TP01-1-S	TP01	2/28/97	5	Tt Field	< 0.8	NA	NA
I17-TP01-2-S	TP01	2/28/97	5	Tt Field	< 0.8	NA	NA
I17-TP01-3-S	TP01	2/28/97	5	Tt Field	< 0.8	NA	NA
Analyses					3	0	0
Detections					0	0	0
Minimum Concentration					0	0	0
Maximum Concentration					0	0	0
HWAD - PCG					233	233	233
HWAD - PCG Hits					0	0	0

Notes:

NA = Not analyzed.

NE = Not established.